



Special Issue on **Interventions to Enhance Adaptive Plasticity after Stroke: From Mechanisms to Therapeutic Perspectives**

CALL FOR PAPERS

Stroke is a leading cause of disability worldwide. Specific rehabilitation interventions, invasive and noninvasive neuromodulation tools, have emerged aiming at enhancement of adaptive plasticity processes and downregulation of postlesional maladaptive plasticity. Attempts to translate potentiation of adaptive plasticity into effective therapeutic strategies have been faced with numerous challenges, such as heterogeneity in clinical characteristics, lesions, and outcomes, as well as barriers to conducting appropriately powered studies. Technical challenges related to the methods for applying neuromodulation via invasive or noninvasive systems have also been numerous. Finally, the current understanding of how animal models may inform or correlate with posttranslational clinical trials remains limited. Current knowledge suggests that understanding mechanisms underlying recovery in different patients and across the translational bridge is crucial to tailor treatments and hence develop successful interventions to enhance clinically meaningful outcomes.

We invite investigators to contribute with original research articles or review articles that focus on investigation of mechanisms underlying effects of rehabilitation interventions in stroke in humans or animals, as well on evaluation of these effects, current knowledge, and gaps that must be addressed.

We are particularly interested in studies that describe the use of preclinical, clinical, imaging, and neurophysiology tools, as well as studies that integrate different approaches to address effects of rehabilitation strategies in stroke rehabilitation or recovery.

Potential topics include, but are not limited to:

- ▶ Recent developments in the use of repetitive transcranial magnetic stimulation, transcranial direct current stimulation, repetitive electrical nerve stimulation, pharmacological modulation, or combinations of these interventions, in motor performance, cognition, pain, functional independence, quality of life, or other outcomes in patients with stroke
- ▶ Advances in understanding mechanisms underlying effects, or in developing safe and effective protocols of deep brain stimulation or invasive direct cortical stimulation
- ▶ Other specific interventions to enhance adaptive plasticity after stroke such as imagery, biofeedback, meditation, virtual reality, robotics, and constraint-induced movement therapy, among others
- ▶ Translational studies in animal models of ischemia or focal injury. These may be preclinical trials or mechanistic or physiological studies aimed at better informing the use of invasive or noninvasive neuromodulation to promote poststroke rehabilitation
- ▶ Animal or human studies about the role of stem cells in restoration of function or recovery after stroke
- ▶ Specificities of paradigms that lead to best results in enhancing stroke outcomes
- ▶ Roles of age, time from lesion onset, stroke etiology, lesion side, site, and structural and functional connectivity in responsiveness to neuromodulation
- ▶ Safety and potential neuroprotective or deleterious effects of rehabilitation interventions at different stages after stroke
- ▶ Duration of plastic changes associated with rehabilitation interventions in animals and humans

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